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ABSTRACT

The impact of generic competencies on workplace performance was examined through a review of literature and evaluation research which focused on conceptualization and piloting of the following key competencies in Australia in 1993-1998: collecting, analyzing, and organizing information; communicating ideas and information; planning and organizing activities; working with others and in teams; using mathematical ideas and techniques; solving problems; and using technology. The following were among the specific topics examined: evolution of Australian key competencies; definition of "workplace performance"; generic skills and work organization; industry perceptions of key competencies; integration of competencies in training; convergence with other trends in education; ways in which organizations have integrated key competencies; status of cultural understanding; transferability; performance levels and assessment; language, literacy, numeracy, and equity issues; professional development needs; and research on generic competencies and the workplace. The key competencies were concluded to be part of an international trend in which educators and industry representatives alike consider generic skills essential for work and life. It was further concluded that many vocational education and training programs need to increase their emphasis on development of underpinning process skills related to generic skills and development of reflective learning processes. (Twelve tables/figures are included. The bibliography contains 64 references and 9 World Wide Web addresses.) (MN)

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The impact of generic competencies on workplace performance

Janelle Moy

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Contents

Abbreviations and acronyms *v*

Executive summary *1*

Introduction *5*

- The international context
- Evolution of Australian key competencies
- Australian developments since 1993
- What is meant by 'workplace performance'?

Findings from recent research *15*

- Interpretations of generic competencies
- Generic skills and the work organisation
- Industry perceptions of key competencies
- Integrating competencies in training
- Convergence with other trends in education
- How organisations have integrated key competencies

Ongoing issues *31*

- The status of cultural understanding
- Transferability
- Performance levels and assessment
- LL&N and equity issues
- Professional development needs
- Research on generic competencies and the workplace

Conclusions *37*

Tables

1 Catalysts for changing competency and workplace requirements *6*

2 Terms used for 'generic skills' in eight countries *6*

3 Mayer key competency definitions *8*

4 The three key competency performance levels described by Mayer *8*

5 Comparative table of generic competencies *10*

6 Guest's model for linking HRM practices and HRM outcomes *13*

Figures

1 Possible generic skills not included in the key competencies but identified by Field and Mawer (1996 p. 22) *17*

2 Final model of skill requirements in high-performance enterprises *18*

3 Peak bodies in Australia supporting key competency initiatives *20*

4 Examples of enterprises involved in the validation of the key competencies *20*

5 Examples of how and why Australian industry values the key competencies *21*

6 The key competencies journey *23*

References *30*

Internet sites *42*

Abbreviations and acronyms

DEETYA	Department of Employment, Education, Training and Youth Affairs
HRM	Human resource management
LL&N	Language, literacy and numeracy
OFTE	Office of Training and Further Education
PETRA	Project and transfer-oriented training
SCANS	Secretary's Commission on Achieving Necessary Skills
VET	Vocational education and training

Executive summary

THIS CONSOLIDATION STUDY synthesises recent research and evaluation literature on generic skills, with a particular focus on the conceptualisation and piloting of the Mayer key competencies in Australia between 1993 and early 1998. The seven key competencies are:

- collecting, analysing and organising information
- communicating ideas and information
- planning and organising activities
- working with others and in teams
- using mathematical ideas and techniques
- solving problems
- using technology

An eighth key competency, cultural understanding, was also piloted, but work on this competency ceased in 1996.

Between 1994 and 1996 the National Key Competencies Pilot Program enabled the piloting and assessment of the Mayer key competencies. This work has contributed to State and national vocational education and training (VET) policy development and to widespread debate on the meaning, purpose and value of generic competencies—and of the key competencies in particular. The piloting process also demonstrated the complexity of translating a widely supported concept—the development of generic skills—into agreed approaches and widespread practice. Consequently, there is still much to be learnt in the area of generic skill development and application in education, training and workplace contexts.

Although key competency projects have been completed in a range of contexts and by different researchers, there has been considerable agreement in project findings. Following a review of the findings and recommendations from pilot projects in the VET sector and workplaces, Hager et al. (1997) identified six core principles for integrating generic competencies. Those principles are:

- Key competencies can be learnt and should be taught.
- Key competencies are overlapping and inter-related, rather than discrete processes with three clearly identifiable performance levels, as conceptualised by Mayer.
- Key competencies should be viewed as both outcomes and as processes (involving 'enabling' or underpinning knowledge) necessary for more complex learning tasks and work performance.
- Key competencies are developed throughout life and have lifelong relevance.
- Key competencies must be contextualised in authentic or simulated environments.
- Key competencies should be integrated explicitly and systematically with technical competencies within all phases of the training cycle.

This consolidation study provides insight into the development of these principles and relates them to broader trends in generic skill development. It demonstrates that the key competencies are not a passing fad. Rather, they are part of an international trend in which generic skills are viewed as essential for work and life.

While there may never be unanimity on what is meant by 'generic skills', in Australia or overseas, the key competencies are highly valued in various Australian work contexts. Different key competencies, in different combinations, are required in different workplace contexts, but the key competencies appear to represent a satisfactory working set of generic skills. The most notable exception is cultural understanding, which requires further work.

The report also demonstrates industry perceptions of the value of the key competencies and provides examples of approaches used to integrate the key competencies into the activities of training providers and enterprises. These approaches demonstrate that the key competencies are not an isolated initiative. Rather, they represent one approach to skill development and enhancement. Various researchers have also noted that links exist between key competency approaches that are explicit, systematic and effective, and approaches that are associated with training for transfer, advanced training techniques, problem- and project-based learning, and the use of continuous improvement teams. However, the links between these approaches and key competency development are not always as explicit as they might be. Within many VET programs there is a need for an increased emphasis on the development of underpinning process skills related to generic skills (such as problem solving and communication with others and in teams) and the development of reflective learning practices.

As a result of this review of recent research, five areas have been identified as requiring further research. The first four areas were identified by Hager et al. (1997). These research areas focus on:

- resolution of the issues surrounding the *cultural understanding* key competency
- teaching and training for learning transfer, particularly practices that encourage 'high road' transfer in a range of formal and informal learning contexts
- effective strategies for integrating the key competencies while addressing equity and English language, literacy and numeracy needs
- the impact of key competency resources and professional development initiatives on teaching and learning practices in the VET sector and workplaces

To date, Australian studies have focussed on the integration of the key competencies in teaching, learning, assessment and reporting practices, particularly in school and VET environments. While generic skills are promoted as enhancing the workplace performance of individuals, work teams and consequently enterprises, there has been far less emphasis on researching the links between generic skills and workplace performance. To address this gap, further testing of the Field and Mawer (1996) model of skills requirements in high performance Australian enterprises is recommended.

Rather than focussing on defining and redefining the key competencies, there is merit in researching and promoting a broader, more integrated approach to workplace performance in which generic competencies are viewed as one important ingredient in the recipe for effective workplace performance by individuals and teams. Other ingredients include learning to learn (or ensuring the development of learning capacities), the attitudes and proactivity of the individual, and applying technical and generic skills in an integrated way. Factors determined by the context in which work is performed also affect employee performance.

Field and Mawer (1996) developed their skill requirement model on the basis of research involving 15 'high performance' enterprises. The term 'high performance' was used to describe the organisations frequently linked with best practice and workplace change. Validation (or customisation) of this model, in a range of enterprises, is recommended as a strategy for increasing our knowledge of the role of generic competencies on, and their role in, workplace performance.

Introduction

The international context

AUSTRALIAN EFFORTS TO identify and develop generic skills are part of a worldwide trend. While these efforts are not new, However, studies since 1990 have resulted in more explicit and systematic attention being paid to generic skills, and demonstrate that this is not a passing fad or political whim.

International catalysts for a focus on generic skills have included the need to develop the skills of the emerging and existing workforce to ensure flexible, adaptable and improved workplace performance. These skills are required because of:

- an increasingly competitive global environment
- rapid technological change
- new forms of work and work organisation
- the evolution of knowledge-intensive economies, characterised by an increased focus on the service sector and the customisation of products and services

People also require new skills to participate effectively in modern society. Enterprises and governments have recognised that technical competencies are no longer enough. New skills, and combinations of skills that integrate and build on technical competencies, are required to perform effectively in this environment. Table 1 sets out some of the catalysts for shifting competency and workplace requirements.

Table 1: Catalysts for changing competency and workplace requirements

Competencies required in old work contexts	*Competencies required in current and emerging work contexts*
Ability to operate in a well-defined and stable environment	Ability to operate in an ill-defined and ever-changing environment
Capacity to deal with repetitive, straightforward and concrete work processes, in which specific knowledge is applied	Capacity to deal with non-routine and abstract work processes—emphasis on knowing how, who and why
Ability to operate in a supervised work environment	Ability to make decisions and solve problems, as an individual or as part of a work team or project team
Isolated work	Group work, interactive work
Ability to operate within narrow geographical and time horizons	System-wide understanding, ability to operate within expanding geographical and time horizons

Source: Adapted from European Commission (1995 p. 9, quoting a 1990 EUROTECNET publication) and Field (1997).

In response to these requirements, a need for broad process competencies, common to different industries and occupations, has been identified, and such competencies have been introduced in a number of countries. While these responses have been broadly consistent, the names given to the cluster of 'generic skills' and the number and definition of those skills differ. Table 2 shows the names used for generic skills in eight countries.

Table 2: Terms used for 'generic skills' in eight countries

Australia	Key competencies
New Zealand	Essential skills
United States	Secretary's Commission on Achieving Necessary Skills (SCANS)—Workplace know-how
United Kingdom	Core/common Skills
France	Crossing or transferable competencies
Germany	Key qualifications
Denmark	Process-independent qualifications
Canada	Strategy for prosperity

Evolution of Australian key competencies

Initial Australian research on generic skills was completed by the Finn committee, resulting in the report *Young people's participation in post-compulsory education and training* (1991). Six key areas of competence were recommended.

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The Mayer committee undertook further definitional work and investigated levels of performance. In their report, *Putting general education to work: The key competencies report* (1992), the Mayer committee defined and described seven key competencies:

- collecting, analysing and organising information
- communicating ideas and information
- planning and organising activities
- working with others and in teams
- using mathematical ideas and techniques
- solving problems
- using technology

The key competencies were defined by Mayer as:

> *. . . competencies essential for effective participation in the emerging patterns of work and work organisation. They focus on the capacity to apply knowledge and skills in an integrated way in work situations. Key competencies are generic in that they apply to work generally rather than being specific to work in particular occupations or industries.* (1992 p. 5)

and also as:

> *. . . essential for effective participation in further education and in adult life more generally.* (1992 p. 5)

Table 3 provides the Mayer definitions for each of the key competencies. The three levels of key competency performance are presented in table 4.

Other possible generic competencies had been considered by the Mayer committee. These included:

- *cultural understanding* (see next section)
- *languages other than English (LOTE)*—identified by the Finn committee but not considered sufficiently generic to all industries and occupations, though it may be warranted in the future
- *'having the right attitude'* which was described, variously, as having a positive attitude, a willingness to learn, displaying initiative and/or self management—the Mayer committee determined that attitudes and values were innate and may be difficult to teach and assess

Table 3: Mayer key competency definitions

Collecting, analysing and organising information	The capacity to locate information, sift and sort information in order to select what is required and present it in a useful way, and evaluate both the information itself and the sources and methods used to obtain it
Communicating ideas and information	The capacity to communicate effectively with others using the range of spoken, written, graphic and other non-verbal means of expression
Planning and organising activities	The capacity to plan and organise one's own work activities, including making good use of time and resources, sorting out priorities and monitoring one's own performance
Working with others and in teams	The capacity to interact effectively with other people both on a one-to-one basis and in groups, including understanding and responding to the needs of a client and working as a member of a team to achieve a shared goal
Using mathematical ideas and techniques	The capacity to use mathematical ideas, such as numbers and space, and techniques such as estimation and approximation, for practical purposes
Solving problems	The capacity to apply problem-solving strategies in purposeful ways, both in situations where the problem and the desired solution are clearly evident and in situations requiring critical thinking and a creative approach to achieve an outcome
Using technology	The capacity to apply technology, combining the physical and sensory skills needed to operate equipment with the understanding of scientific and technological principles needed to explore and adapt systems

Table 4: The three key competency performance levels described by Mayer

Level 1	The competence needed to undertake activities efficiently and with sufficient self-management to meet the explicit requirements of the activity and to make judgements about quality of outcome against established criteria
Level 2	The competence needed to manage activities requiring the selection, application and integration of a number of elements and to select from established criteria to judge quality of process and outcome
Level 3	The competence needed to evaluate and reshape processes, to establish and use principles in order to determine appropriate ways of approaching activities, and to establish criteria for judging quality of process and outcome

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During the preliminary industry validation study, other suggestions included:

- motor skills (dexterity)
- creativity
- health (physical fitness)
- ethics
- customer service skills

However, following international comparisons:

> *The Mayer committee deduced that, as its list of competencies virtually mirrored lists of generic skills in other countries, its list was accurate.*
> (Werner 1995 p. 24)

Table 5 sets out the generic skills identified by four countries. Werner (1994, 1995) provides further detailed information and international comparisons on generic skills development and definition. In particular, he notes the absence of:

- cultural understanding, when compared with the generic skills identified for New Zealand and the United States, which explicitly include cultural understanding within other generic skills
- a modern foreign language, identified by the United Kingdom
- physical skills, added to the essential skills identified for New Zealand

Werner (1994, 1995) also notes variations on aspects such as the notion of transferability and use of performance (or proficiency) levels.

In their synthesis report, the European Commission (1995) highlighted the lack of a common set of terms and definitions for key or core competencies across member countries. A need to address the development of 'the self-learning competency', to facilitate learning transfer, is also discussed in some detail:

> *It cannot be assumed that workers are automatically capable of acquiring key competencies. It is here that the importance of fostering self learning competency becomes of paramount importance and can be viewed as an underpinning competence . . . A self-learning competency is one of the key attributes of a self-managing person* (European Commission 1995, p. 14)

Drake (1995), Ostenk (1995) and Prais (1995) also note the critical nature of 'learning to learn' competence and basic foundation skills (such as literacy and numeracy) to European employers. These competencies are identified as important in education, recruitment and training practices. A significant example of how the importance of learning skills and skills transfer has been addressed is the PETRA (project and transfer oriented training) project, sponsored by the German government (Werner 1995 pp. 51–52). One core skill requires the explicit application of learning techniques and inter-related thought processes associated with work, through the use of deductive thinking, transferability and thinking in systems.

Table 5: Comparative table of generic competencies

Australia	*United Kingdom*	*United States*	*New Zealand*
Key competencies	Core skills	Workplace know-how	Essential skills
Collecting, analysing and organising information	Communication	Information Foundation skills: basic skills	Information skills
Communicating ideas and information	Communicating	Information	Communication skills
	Personal skills: Improving own learning and performance	Foundation skills: basic skills	
Planning and organising activities	Personal skills: Improving own learning and performance	Resources Foundation skills: personal qualities	Self-management skills Work and study skills
Working with others and in teams	Personal skills: working with others	Interpersonal skills	Social skills Work and study skills
Using mathematical ideas and techniques	Numeracy: application of number	Foundation skills: basic skills	Numeracy skills
Solving problems	Problem solving	Foundation skills: thinking	Problem-solving and decision-making skills
Using technology	Information technology	Technology Systems	Information skills Communication skills
	Modern foreign language		
Post-Mayer (Using) cultural understandings (added in 1993 —deleted in 1996)			Physical skills

Note: Where generic skills are comparable with more than one key competency, they are repeated
Source: Adapted from Werner (1995 p. 38) and updated

In the United States, the Secretary's Commission on Achieving Necessary Skills (SCANS) (1991) reported on the competencies, skills and personal qualities required to succeed in high-performance workplaces, characterised by high-skill, high-wage employment. The report found that school leavers and workers required:

- a solid, three-part foundation, or 'fundamental skills' comprising: basic literacy and computational skills; thinking skills (including creative thinking, decision-making, problem solving, learning to learn and reasoning); and personal qualities (responsibility, self-esteem, sociability, self-management and integrity/honesty)

- five 'workplace competencies': the ability to manage resources, to work amicably and productively with others, to acquire and use information, to master complex systems, and to work with a variety of technologies

The report recommended that these competencies should be learnt in authentic contexts, in the environment in which they would be applied, and has resulted in educational reform and efforts to improve collaboration between secondary and post-secondary providers and employers. Employers were also advised to upgrade and organise employer-sponsored training around SCANS know-how.

Since 1991, efforts to integrate SCANS skills in the vocational and technical curricula of secondary and post-secondary institutions have been made through a variety of initiatives at the State and local level (see Lankard, and SCANS web sites such as dccd.edu/nlc/misc/scans and jhu.edu/~ips/scans). Many of these initiatives are associated with the School to Work Opportunities Act (1994), which mandated the creation of State-level programs for integrating school and work. Corporations that have integrated SCANS language into their activities include Motorola, NationsBank, AT&T and the Federal Office of Personnel Management.

However, Cappelli et al. (1997) note that debate continues in the United States on the issue of the 'skills gap', its causes, characteristics and solutions. While some argue that United States schools have failed young people and employers, Cappelli et al. indicate that, as a result of the changing work environment and raised skill requirements, all individuals now require the competencies and qualities previously associated with 'more highly educated individuals' (p. 165). This assertion is demonstrated in Cappelli and Rogovsky (1994) which used United States data from 56 000 production jobs between 1978 and 1986 to demonstrate increased demand, over time, for considerably higher skills, '... especially behavioural ones (involving communication, negotiation and group dynamics' (p. 212).

11

Australian developments since 1993

Australian ministers for vocational education and training endorsed the findings of the Mayer committee in 1993 and approved consideration of an eighth key competency, *(using) cultural understandings*. However, work on this competency ceased in mid-1996 as a result of disagreement on defining this competency and whether using cultural understandings was embedded in all key competencies.

Since 1993 there has been considerable research and debate on the key competencies. Between 1994 and 1996 the Commonwealth government funded a range of investigative pilot projects in schools, vocational education and training (VET) institutions, and workplaces throughout Australia. Over $20 million was assigned by the Department of Employment, Education, Training

and Youth Affairs (DEETYA) to pilot and assess the feasibility of Mayer committee proposals. Much of the focus was on entry-level training and the integration of the key competencies in the schools sector. Large projects with a VET and/or workplace focus were completed in New South Wales, South Australia and Victoria. These projects have contributed to an evolving understanding of the key competencies and the need for their inclusion in all phases of the training process.

Significantly, the projects undertaken as part of the National Key Competencies Pilot Program have resulted in broadly consistent findings and recommendations, though the projects involved different researchers, target groups and methodologies. These projects have assisted in transforming consideration of the key competencies from a conceptual and theoretical activity to a more practical activity, in which best practice principles have been identified, case studies documented and tools developed and trialed. In addition, these projects highlight critical issues and areas requiring further attention. However, there is still much to be done to translate research recommendations and policy decisions into actions that make a significant difference in the learning experiences of Australian students and employees.

This consolidation study synthesises those findings and presents them within the context of both international trends and recent Australian developments which may be linked with generic skills and effective workplace performance. Further background information on the development of the key competencies is provided by Werner (1995) and Department for Education and Children's Services, South Australia (1997).

What is meant by 'workplace performance'?

This review focusses on the impact of generic competencies on workplace performance. However, attempts to link the development and application of generic competencies with workplace performance are somewhat problematic.

Smith and Marsiske (1997) suggest that job performance is '. . . a multi-dimensional concept' (p. 89) and that abilities and skills in adulthood and their relationship to work productivity and performance represent '. . . a moving target' (p. 89). Rather than defining job performance, they identify three criteria as 'important in job performance' (p. 93):

- the amount of knowledge (verbal knowledge on technical details, procedural and strategic knowledge and practical knowledge)
- the level and nature of knowledge organisation (representation of problems, information access and storage)
- metacognitive strategies (knowledge about managing oneself and others, insight into one's capabilities and limits) and application of this insight to on-the-job performance

Reflecting on this issue from a broader human resource management (HRM) perspective, Guest (1997) notes that while the impact of HRM on performance is the dominant research issue in the field:

> *There is no general theory about performance, though various approaches and models exist, based on specific disciplinary perspectives, such as economics, psychology and production management* (p. 266).

He indicates that the concept of performance involves multiple stakeholders and that various performance measures are required at the individual, group and organisational levels to establish links between HRM and performance. He also suggests that the term HRM 'outcomes' may be a more appropriate term than 'performance'.

Based on available evidence, Guest (1997) suggests that behaviour change and improved job performance will only occur when three sets of HRM practices are linked with performance, or HRM outcomes. His model is outlined in table 6.

Table 6: Guest's model for linking HRM practices and HRM outcomes

HRM practices	*HRM outcomes(or performance)*
Selection Socialisation Training and development Quality improvement programs	Skills and ability (quality)
Job security Internal promotion Individualised reward system	Effort/motivation (commitment)
Communication Employee involvement Team working Job design Flexible job descriptions	Role structure and perception (flexibility)

Source: Adapted from Guest, 1997, p. 269

Given the views of Guest (1997) and Smith and Marsiske (1997) presented above, there is an obvious need to improve the theoretical and analytical frameworks used to define workplace performance and the factors that contribute to it. Until this is achieved, it is difficult to make definitive statements about the impact of generic competencies on workplace performance.

However, as shown in Sections 1 and 2 of this consolidation study, current and emerging production and work systems have resulted in an increased focus on generic skills as a means of improving workplace performance. Within the context of generic skills this notion of workplace performance is related to individual employees, work groups, organisations and the national economy.

Findings from recent research

Interpretations of generic competencies

WHEN SYNTHESISING FINDINGS from VET and workplace projects, Hager et al. (1997) note that:

> *The key competencies were interpreted in different ways across and within the individual stakeholder groups. They were nevertheless found to be relevant to and actually present in most work environments and in most training curricula.* (p. 4)

The seven Mayer key competencies are identified as providing a satisfactory list of generic skills (see, for example, Field & Mawer 1996 and Ryan 1997). However, on the basis of various research reports (such as Down et al. 1997, Hager et al. 1996 and Lohrey 1995), Hager et al. also suggest that the key competencies and the nature of the constructs that underpin them are more complex than originally appeared. The key competencies overlap and need to be seen both as outcomes and as processes that underpin higher order competencies. Consequently, the key competencies have the potential to improve learning and workplace performance by facilitating a transfer from narrow, or 'low road' approaches to skill acquisition and tasks, to 'high road' approaches in which units of work and work practices are viewed in an integrated, holistic way.

Evidence from recent research also indicates that:

- Industry values generic skills, though the term *key competency* is not widely understood and the language of the key competencies creates barriers. A need to simplify the language, minimise jargon and relate the key competencies to enterprise and workplace contexts has been identified repeatedly (see, for example, Jasinski 1996, Marett & Hoggard 1996, Hager et al. 1996, Rumsey 1995).
- The key competencies provide a foundation for lifelong learning, relevant to all workers and unemployed people, not just young people.

- Different key competencies, in different combinations, are required in different industry and enterprise contexts. The key competencies appeared most relevant to work environments characterised by continuous improvement, work teams, a customer service culture, organisational change and the use of technology. They are less evident in enterprises where narrow, repetitive tasks are performed (Gonczi et al. 1995; Hager et al. 1996; Down 1997).
- Using mathematical ideas appeared to be the least understood and used key competency (Jasinski 1996, Athanasou et al. 1994).
- Although significant key competency gaps were evident in apprenticeship curricula, industry consultations indicated that the key competencies were required by skilled workers in the automotive, building and construction, electrical and electronics, engineering and hospitality industry sectors (Office of Training and Further Education, Victoria [OTFE] et al. 1996).

Several authors have identified a need for further work on some key competencies and to look beyond the key competencies as a vehicle for improving performance. While confirming the value of the key competencies, Jasinski (1996) concludes:

> *. . . the Mayer key competencies . . . may be more appropriate as a starting point than an end point for exploring teaching and learning processes and strategies to promote effective participation in work education and life.* (p. 1.2)

She notes that other skills may be important for effective workplace performance, especially beyond entry-level positions. Specific additional skills identified by Jasinski were:

- cultural understanding, which was viewed as a significant access and equity issue and requiring further exploration (this finding is consistent with other projects and is considered in a later section)
- entrepreneurialism, or proactivity in identifying and capturing opportunities
- learning competencies, given the trends towards lifelong learning and the learning organisation
- intrapersonal and self-awareness competencies that underpin professional competencies

Marett and Hoggard (1996) also highlight the importance of linking the key competencies with learning transfer and the notion of lifelong learning:

> *The key competencies play an important role in providing an integrative framework to facilitate the process involved in learning to learn. It would appear that learners profit most when they actively engage in the creation of knowledge by identifying the structures and principles that underpin their actions. The process of reflection, or the continuous awareness and re-assessment by the*

learners of their own learning, assists in this. Self-directed learning, or learning to learn, is not explicitly included in the key competencies but is recognised as being crucial to their effective development and transfer. (p. 3)

As noted in an earlier section, a focus on 'developing learning capacities' (European Commission 1995, p. 4) is also evident in some overseas approaches to generic skills development.

In their study of the generic skills of high-performance workplaces, Field and Mawer (1996) also canvassed possible generic skills not included in the key competencies and identified a number of items (see figure 1).

Figure 1: Possible generic skills not included in the key competencies but identified by Field and Mawer (1996 p. 22)

making decisions	delivering results	thinking creatively
focussing on customers	understanding systems	managing change
improving own performance	understanding other cultures	understanding organisational culture
speaking a foreign language	sharing leadership	setting goals
negotiating	planning for tomorrow	applying business acumen
adding value	being confident	listening
		writing with impact

However, they found that:

> *As the case studies progressed, it became clear that the key competencies represent a very satisfactory list of generic skills. While it is certainly possible to think of other items which could be included extending the list begins to cause difficulties. Amongst the key competencies there is already a high degree of overlap, and as more items were added, this problem gets worse. Moreover, some of the extra items fail to satisfy Mayer's limiting criteria.* (p. 21)

As noted by Field and Mawer, some of the suggested generic skills in figure 1 overlap with existing key competencies. Others revisit competencies considered but rejected by Mayer because they involved attitudes rather than skills, or were not broadly applicable across work contexts.

Generic skills and the work organisation

Rather than adding to the Mayer list of key competencies, Field and Mawer suggest that generic skills cannot be considered in isolation from other factors that contribute to individual, team and enterprise performance. As shown in figure 2 below, they advocate a broader, more holistic model in which effective employees require the key competencies in combination with:

- routine technical skills
- learning competencies, to adapt to new circumstances and facilitate the learning of others
- empowerment, or competence to act independently to achieve individual, team or organisational goals (which include being proactive)
- an intellectual and attitudinal core, which includes an intellectual dimension (knowledge, thinking and concepts) and an attitudinal dimension (values, beliefs and aspirations)

Figure 2: Final model of skill requirements in high-performance enterprises

Source: Field and Mawer (1996), p. 18

This approach is derived from and reinforced by recent United States work, which focusses on workplace transformation and the concept of high-performance work organisations (see, for example, Applebaum & Batt 1994, Cappelli & Rogovsky 1994, Cappelli et al. 1997). While various approaches are evident from enterprise case studies, the two high performance models identified by Applebaum and Batt (1994) are 'lean production' and 'team production'. The two approaches vary in the strategic value placed on human resource practices. Lean production relies on managerial and technical expertise, together with centralised decision-making. The team-based model focusses on a 'high road' competitive strategy. Human resource management practices, quality engineering and continuous improvement are central to this strategic approach.

Both Applebaum and Batt (1994) and Cappelli and Rogovsky (1994) argue that front-line employees require additional skills and training to support high-performance work systems, and particularly team-based approaches. Cappelli et al. (1997) also indicate that, despite research design and measurement issues, '. . . the evidence does support the conclusion that high performance work organisations can deliver high levels of performance' (p. 112) and that new forms of work organisation appear to be more effective for organisations due to reduced supervisory costs, workforce flexibility and improved employee performance. However:

> *These new work systems demand substantially more from employees than did traditional arrangements. Employees need more skills, particularly team-related behavioural skills, to succeed in these new systems.* (pp. 8–9)

Like Field and Mawer (1996), both Cappelli et al. (1997) and Guest (1997) indicate that improved work performance and productivity usually results from the integration, or 'bundling', of a number of complementary human resource practices, including training and development, rather than the impact of isolated practices.

Industry perceptions of key competencies

Although industry is not particularly familiar with key competency terms and concepts, Hager et al. (1997) found that:

> *It can now be asserted confidently that the constructs represented by the key competencies are very highly valued by teachers/trainers, students/parents, employers and their peak organisations. There is agreement amongst all stakeholders that the key competencies need to be integrated into all aspects of vocational education and training: curriculum; resources; delivery; assessment and reporting.* (p. 4)

As shown in the figures below, industry endorsement of the key competencies has occurred in various ways and at various levels, including peak bodies (see figure 3), industry representation on project steering committees and enterprise participation in both case study and action research.

Figure 3: Peak bodies in Australia supporting key competency initiatives

Business Council of Australia	Australian Businesswomen's Network
Australian Chamber of Commerce and Industry	Council of Small Business Organisations
Australian Council of Trade Unions	Metal Trades Industry Association
Australian Chamber of Manufacturers	Business in the Community

The quotations below demonstrate that support:

> *Australia's future depends on our ability to improve the skills of our workforce. This is an important task for industry, governments, educators, trainers and the community generally . . . We must now start to deliver these Key Competencies and monitor their achievement.* (Bert Evans, Chief Executive, Metal Trades Industry Association, cited in OTFE et al. 1996)

> *If we consider the big picture it is clear that a greater emphasis on the Key Competencies will enable Australia to better match its educational outcomes with both its current and future global, intellectual, cultural and skills development needs.* (Susan Halliday, Assistant Director, Business Council of Australia, cited *in* DEETYA 1996)

Many small, medium and large enterprises, from a range of industry sectors, have been involved in key competency research and validation projects. Some of these enterprises are identified in figure 4.

Figure 4: Examples of enterprises involved in the validation of the key competencies

Optus Communications	Westpac Customer Service Centre	MLC
Australian Taxation Office	The Uncle Tobys Company	Lever Rexona
Merck Sharp & Dohme	NRMA	Tubemakers Steel, Sydney
Town Hall Newsagency	Mitsubishi	Ford Motor Company
Woolworths (Neutral Bay supermarket)	Goodman Fielder Milling and Baking Group	Acme Preston
Baptist Community Services	Hunter Valley Bakery	Fesq Dorado & Co
Barwon Independent Living	Arcadian Wool Brokers	

A review of the literature demonstrates how and why industry values the key competencies. Nine specific examples are provided in figure 5.

Figure 5: Examples of how and why Australian industry values the key competencies

- Key competencies are used frequently in staff recruitment and performance review processes (Marett & Hoggard 1996; Hager et al. 1996).
- Generic competencies are considered important in occupational classification and description, particularly when matching individuals to organisations (Athanasou et al. 1994).
- Key competencies are valued when they are translated into language and activities which meet specific enterprise and employee/trainee needs (Jasinski 1996 pp. 4.13–14; Moy et al. 1996).
- The key competencies are not new and have always been valued within good teaching and training practice (Down 1997 p. 14; Grant & Moy 1996, section 4).
- Industry values tools and approaches which add value to existing on-the-job training practices by explicitly and systematically integrating the key competencies (Ryan 1997, Moy et al. 1996).
- The national industry training advisory bodies for the building and construction, electrical and electronics, engineering, hospitality and automotive industries endorsed the OTFE et al. (1996) report recommending the explicit integration of the key competencies into all phases of the training cycle and training packages.
- Five of the six enterprises in the case studies by Marett and Hoggard (1996) recognised the role of the key competencies in enhancing job performance and used a range of implicit and explicit strategies to develop and maintain employee key competencies.
- Industry values the use of portfolio approaches as a method of assessing and reporting key competency achievement, because of the focus on multiple sources of evidence and access to contextualised information on when and where the key competencies were demonstrated (National Industry Education Forum 1996, Ryan 1997).
- Employer demand for generic skills in the recruitment and selection of graduates has resulted in universities placing an increased emphasis on the identification and development of generic skills (Gow 1995, University of NSW Professional Development Centre 1997, Careers Advisory Board, University of Western Australia 1996).

The *Australian National Strategy for Vocational Education and Training 1998–2003* (Australian National Training Authority, n.d., pp. 5, 13) also highlights the need for further improvement in the integration of key competencies in all training programs and education and training experiences.

Integrating competencies in training

Various key competency projects have identified principles and practices for successful key competency integration and development. While some variations are evident, a high degree of consensus has resulted from projects in VET institutions and workplaces throughout Australia. From this research, Hager et al. (1997 pp. 10–11) identified six core principles:

- Key competencies can be learnt and should be taught.
- Key competencies are overlapping and inter-related, rather than discrete processes with three clearly identifiable performance levels, as conceptualised by Mayer.
- Key competencies should be viewed as both outcomes and processes (involving enabling or underpinning knowledge) necessary for more complex learning tasks and work performance.
- Key competencies are developed throughout life and with lifelong relevance.
- Key competencies must be contextualised in authentic or simulated environments.
- Key competencies should be integrated explicitly and systematically with technical competencies within all phases of the training cycle.

Jasinski (1996), OTFE et al. (1996) and Ryan (1997) all note that mapping activities and the production of grids showing the presence of the key competencies in competency standards should be regarded as a necessary first step. Key competencies also need to be explicit in course documentation (i.e. the course philosophy, course description, course outcome, module purpose, learning outcomes and assessment strategies), professional development, delivery strategies and structured reflection if key competency integration is to be translated into widespread practice.

Two approaches to key competency integration have been trialed: the integrated and the adjunct approach. The integrated approach intertwines the key competencies explicitly with vocational competencies in all aspects of training. It is the favoured model, perceived as encouraging a rich, holistic approach to the integrated development of technical and generic skills. However, it is also recognised as a more complex and sophisticated approach. In the adjunct approach the key competencies are included, but remain separate from technical competencies. Separate modules, such as communication or team work, may exist, possibly as foundation modules.

Another significant point of consensus is that the key competencies can be fostered through the use of certain teaching and learning practices. These practices are explored further in the next section.

Convergence with other trends in education

The key competencies are not an isolated initiative. Rather, they represent one approach to skill development for environments requiring flexibility, adaptability and responsiveness. Key competency pilot projects have also acted as a catalyst in exploring and reinforcing good practice in teaching and learning. The beginning of this chapter highlighted links between generic skills, lifelong learning and learning organisations. This section expands on those links.

As the key competencies have been researched and piloted, links between generic skills and a number of related trends and organisational initiatives have been explored. Figure 6, below, identifies some of the links researched as part of the key competency piloting process.

Figure 6: The key competencies journey

KCs as a set of steps in a checklist
KCs as a discrete process
KCs as integrated performance
MAYER
Lifelong skills
KCs – integral to learning organisations
It's not a KC if it can't be transferred
Workplace competence
KCs as 'high road transfer'

Source: OTFE et al. 1996, p. 12.

In addition, strong links have been noted between key competency approaches that are explicit, systematic and effective, and are:

- adult learning principles
- learner-centred approaches which provide multiple opportunities and contexts for skill acquisition and demonstration
- advanced training techniques
- training for transfer
- active and interactive learning, such as problem- and project-based learning, using authentic learning contexts, especially the workplace and workplace simulations
- the conscious use of reflection, so that learners reflect on what has been learnt and the learning processes, as a critical aspect of competency development, self-awareness and the development of lifelong learning skills
- performance of multiple roles by the teacher/trainer, who is able to model key competencies and perform appropriate roles, such as facilitator, coach and mentor
- inclusive approaches to teaching/training, in which individual differences and needs are accommodated
- holistic approaches to assessment, which cluster a number of generic and technical competencies and include constructive feedback

Ryan (1997) indicates that these features are common across school, VET and workplace environments, with the key competencies providing a consistent vehicle for the encouragement of quality learning in all of these environments. These findings are consistent with United States studies reported in Lankard (1995) and ScansLink.

24

Workplace research in New South Wales also noted the congruence between approaches that promote the development of key competencies and the skills required by members of continuous improvement teams. TAFE NSW (1996) field-tested the explicit teaching of the key competencies through the use of generic key competency tools. These tools were used in complex problem-solving activities related to simulated work settings. Additional key competency development tools are identified by Grant and Moy (1996). They note that many of these tools, such as brainstorming, cause and effect diagrams, pareto charts and consequences mapping are used by teachers, trainers and quality teams. However, while many trainers and teachers use these techniques, they do not always recognise the link with key competencies or inform learners/team members that they are developing generic skills. Research evidence also suggests (for examples, see TAFE NSW 1995, Hager 1997, Hager et al. 1997) that there is a need to focus attention on making the reflection/evaluation aspect of generic skill development more explicit, especially in less formal workplace learning contexts where 'buddying' and coaching are used.

Many organisations have now embraced quality management, work re-organisation requiring teamwork, and introduced new process technology. These trends are evident in the enterprise training study completed by Smith et al. (1996). Similarly, in the Australian service enterprises surveyed by Beaumont and Sohal (1997), 94 per cent used at least one quality management practice, particularly ISO 9000 certification or total quality management. Given the links between key competency development and current/emerging work practices, it appears desirable that these links be made more explicit and that an increased emphasis be placed on the facilitation and development of underpinning process skills within the Australian VET sector. Support for this re-orientation is also evident in research on training and learning in small business (Field 1997).

How organisations have integrated key competencies

Key competency projects provide a diverse range of case studies and examples of approaches used to integrate the key competencies in explicit ways. These examples cover a range of industries and enterprises of varying sizes. A small number of examples are highlighted below.

Mapping the key competencies

A number of projects used mapping activities to identify the presence of the key competencies in training curricula and teaching/learning resources. These approaches were considered effective in identifying the existence of gaps and, consequently, in developing strategies to improve the quality of training documents. For example, the mapping of sample apprenticeship curriculum documents demonstrated that the key competencies were not evident to the breadth and depth considered necessary. This finding demonstrated the need for specifications for the development of curricula to include explicit requirements for the integration of the key competencies (OTFE et al. 1996 p. xi). Mapping of five TAFE NSW courses to the equivalent of Year 12 (i.e. Australian Qualifications Framework level 2—TAFE NSW, 1995) also indicated an under-representation of both problem-solving and planning and organising competencies and little explicit emphasis on reflective learning practices.

Models for key competency integration

OFTE has developed a conceptual model for the integration of the key competencies at all phases of the training cycle, covering competency standards, learning outcomes, assessment strategies, delivery strategies, workplace activities, and reflection (see OTFE et al. 1996 p. xii). This model has been applied in a number of key competency projects and used as the basis for advice on the development of the endorsed and non-endorsed components of training packages (Down et al. 1997).

In South Australia the 4MAT® instructional design and delivery format was identified as providing a meta-model which synthesises best practice in key competency development with current research on learning theories and instructional design. The format was trialed in business studies, community services and health, and women's education and health. It was evaluated as valuable in providing VET teachers with access to teaching and learning methodologies that enhanced learning experiences by contributing to the development of key competencies, skills in learning to learn and learner-centred approaches. Jasinski (1996) also notes that the approach provided a more focussed and systematic approach to teaching and learning.

Examples of good practice

Documents such as Down et al. (1998) provide advice and examples for those developing the endorsed and non-endorsed components of training packages. The Key competencies professional development package (Department for Education and Children's Services, South Australia, 1997) also contains a database of hundreds of examples of the key competencies in a range of contexts. Information is accessible by key competency, by setting (i.e., school, VET, work, industry), by focus (i.e. how to develop and apply) and through a browse facility. Other useful snapshots and case study examples are provided in Downs (1996), Ryan (1997) and Jasinski (1996).

Teaching and learning specific key competencies

The Mitsubishi Motors Australia Limited Vehicle Industry Certificate includes a problem-solving module which teaches the company's approach to problems and uses actual enterprise examples. This approach was adopted as part of the customisation of the course because '. . . problem solving has direct productivity outcomes' (Rowlands, in Jasinski 1996 p. 4.14). Jasinski (1996 p. 6.38) also provides an example of the integration of five key competencies through problem-based learning at the International College of Hotel Management. A problem-based scenario is used in the subject 'information and data collection' to simulate the work processes used by market researchers.

Similarly, TAFE NSW (1996) developed and field-tested key competency tools which targeted the teaching and development of three key competencies: working with others and in teams, planning and organising activities and solving problems. The field test demonstrated the application of tools such as cause and effect (or fishbone) diagrams and the use of problem scenarios in manufacturing, hairdressing, child care and hospitality work contexts. Following further refinement, these examples are provided in Moy and Grant (1996) in a format suited to other education and training practitioners.

Integration of key competencies in workplace training

A number of recent projects have focussed on approaches used by enterprises to develop generic skills. Seven researchers from the University of Technology, Sydney worked with 22 enterprises to explore their approaches to key competency development (see Hager et al. 1996). One finding of this study was the need for practical, user-friendly resources for workplace trainers and supervisors. A follow-up project was initiated to produce this resource (see Moy et al., 1996). It provides practical information on five approaches used within and across enterprises to develop the generic skills of employees at all organisational levels. The five approaches are:

- using critical incidents (or naturally occurring events) in on-the-job training
- problem-based learning and working with training scenarios
- project learning in on-the-job training
- performance review using the key competencies
- mapping for the key competencies

One training and quality assurance manager in the hospitality industry commented:

> *These approaches aren't new, but they do provide good tips and ideas that I can use or modify. They're particularly relevant to our on-the-job training and other areas of human resource management* (Moy et al. 1996 p. 13).

A number of projects have resulted in enterprise case studies of workplace approaches to the recognition and development of generic skills. These include Down et al. (1997), which provides nine case studies focussing on the use of the key competencies in work management approaches, and Marett and Hoggard (1996), which focusses on the key competencies and learning transfer. A number of similarities are evident in the findings of the two studies. Both affirm the integrating nature of the key competencies, especially their importance to holistic approaches to learning and the wider aspects of workplace performance. As shown in Hager et al. (1997) this is a common theme that has emerged from key competency research. Both project reports also highlight the value of

support mechanisms for employees developing and applying generic skills. Identified support mechanisms include coaching, mentoring, modelling of generic skills by supervisors/trainers and team-based learning and work practices. Workplace environments where assistance is accessible and mistakes are viewed as learning opportunities also enhance opportunities for learning. Employee traits such as motivation, a desire for self-managed learning and openness to change are also desirable ingredients.

The key competency projects and a general review of the training and education literature reveal that organisations are using a large array of formal and informal methods to ensure that individuals and work teams develop generic skills. While enterprises value generic skills, approaches to their development are highly variable and range from the *ad hoc* and highly implicit, to some highly innovative and explicit methods which extend beyond traditional training programs. Organisations tend to use their own terminology for generic skills and factors such as references to the key competencies and learning transfer are frequently implicit, rather than explicit. Organisations also tend to focus on developing generic skills that are relevant to workplace performance or particular organisational priorities, rather than taking a broader approach, which is considered the responsibility of the education and training sector. For example:

- All of the 30 enterprises studied in *Enterprise training in Australia* (Smith et al. 1996) provided generic skills training, with small enterprises using both internal and external sources and large enterprises accessing external generic skills training. Generic training focussed on training for quality assurance (emphasising problem solving, teamwork and communications skills) and for new forms of product and process technology.
- Process improvement projects integrate and apply problem solving, data analysis, and communication and teamwork skills within organisations such as the Australian Taxation Office, Uncle Tobys and Westpac Customer Services.
- The South Australian Process Manufacturing Industry Training Advisory Board and Onkaparinga Consultancy Service (Onkaparinga Institute of TAFE) have produced a *Discover the keys* pocket guide and a three-hour module for workplace trainers in two formats (facilitator's guide and self-paced workbook). The package, which can be accessed through the Internet, provides information on incorporating the key competencies into training and mentoring activities.

Some specific examples of enterprise productivity improvements resulting from employees acquiring and applying generic skills are evident in the literature. For example, Kaye (1997) cites the example of Hannan Print, a printing company where productivity was improved by the acquisition of team skills by workers. This involved a training program which included coaching and mentoring. Similarly, Marquardt (1996) uses international evidence to highlight the benefits to organisations of using action learning sets

of four to six people to solve organisational problems. Leading global companies that use action learning sets include General Electric, Whirlpool, Arthur Anderson and Honda.

A large number of self-help manuals and workbooks are marketed to assist organisations to form, train and operate quality improvement, benchmarking and planning teams. While there is usually no explicit mention of the development of broadly based 'generic skills' or 'key competencies', these skills and underpinning process skills are targeted because they are perceived to improve individual and team performance in the workplace. Examples include Telford (1996), AusIndustry Enterprise Improvement Services (1995) and the best-selling Memory Jogger series, distributed through the Australian Quality Council. The series includes Brassard and Ritter (1994), which uses three categories for the tools provided: working in teams, working with numbers and working with ideas.

A final example of the integration of generic competencies into work management practices is provided by Field and Mawer (1996 pp. 27–28). Teamwork training is reinforced and complemented in many high-performance organisations by a range of strategies such as remuneration, team awards for quality and customer service and team-centred performance indicators.

Ongoing issues

FOLLOWING AN ANALYSIS of recent key competency research, Hager et al. (1997) identified four main areas as ongoing issues. Those areas are the status of cultural understanding, transferability, the relationship between the key competencies and language, literacy and numeracy, and performance levels. This section reviews those issues, together with several others. Areas for future research are also identified as part of this overview.

The status of cultural understanding

As noted earlier, an eighth key competency, *(using) cultural understanding*, was trialed in some key competency projects. Work was also undertaken to define, describe and determine performance level for this key competency. However, this work ceased in mid-1996 due to a lack of conceptual agreement on what should be meant by *(using) cultural understanding*. This lack of agreement is evident when the approach of the NLLIA Centre for Workplace Communications and Culture (1994) is compared with the work of Rumsey and Hannan (1996). The former focussed on issues associated with multiculturalism and languages other than English (LOTE) and did not result in a descriptor consistent with the other key competencies. Rumsey and Hannan (1996) produced a definition that emphasised the culture and values of the workplace, rather than a more generic competency, applicable in a range of life, education and work contexts.

Although work on this key competency has not been continued, further work does appear desirable. Hager et al. (1997) identify a need for greater emphasis on the culture of the workplace, while Jasinski (1996) recommends a definition and description that recognises and reflects the multiplicity of the term 'culture'. She suggests that this multiplicity should include the impact of indigenous people on rural and isolated communities, workplace culture and multiculturalism:

> *The key competency related to cultural understandings needs resolving. There are many dimensions to this concept which could result in more than one key competency being generated from this concept* (1996 p. 2.1).

Ryan (1997 p. 36) also notes that the role of cultural understanding may be advanced through approaches other than the key competencies, such as the place of cultural understanding in curricula and in relation to civics and citizenship education.

Transferability

Transferability is a complex and contentious issue requiring further research. It has been the subject of considerable debate, particularly as the Mayer committee's definition of competence required the key competencies to be transferable to new tasks and situations. The notion of transfer is also viewed as critical in developing a flexible and adaptable workforce, able to respond to the demands of continual change.

Some of the research supports the transferability of the key competencies. Other research cautions about making assumptions concerning the ability of individuals to transfer generic competencies from one context to another, given factors such as the complexity of the task and cultural and organisational differences. The research evidence suggests that transfer is more likely to occur when individuals have had the opportunity to develop and demonstrate key competencies in diverse and increasingly complex situations and apply reflective learning processes. Further research is required on teaching and training for transfer, including factors that encourage 'high road transfer' (or adaptability) in a range of learning contexts, such as provider organisations, workplaces of varying sizes and when flexible delivery options are used. This research would need to expend on research by Misko (1995), Lohrey (1995) and Marett and Hoggard (1996).

Performance levels and assessment

32

Little support is evident for the use of the three Mayer performance levels:

> *These performance levels are perceived as barriers to the effective implementation of the Key Competencies in VET sector training and learning arrangements* (OTFE et al. 1996 p. xiii).

Researchers found that the performance levels were difficult to apply consistently across diverse contexts and tasks. They also encouraged a 'tick and flick' approach in which the presence and development of key competencies may be treated in a narrow, simplified and sequential way. The preferred approach that emerged from pilot projects is for the integrated assessment of key competencies and vocational competencies. This approach is also in line with overseas findings (see, for example, Wolf 1991).

Similarly, there was no support for a national key competency reporting system. While there needs to be further research on key competency assessment and reporting, the use of descriptive reporting formats has been advocated by VET practitioners and industry representatives. Approaches such as portfolios, logs and reference-style reporting have been supported (see National Industry Education Forum 1996, Ryan 1997 and OTFE et al. 1996) because of the focus on multiple sources of evidence which provide information on the context of the activity and its complexity. The use of portfolios is also favoured because of application across the school and VET sectors and the role of the learner in reflecting, collecting evidence and monitoring key competency acquisition.

LL&N and equity issues

There have been various interpretations of the relationship between the key competencies and English language, literacy and numeracy (LL&N). However, LL&N competence should be seen as underpinning the key competencies, rather than being synonymous with key competencies such as communicating ideas and information or using mathematical ideas and techniques. The need for integrated policy approaches, which then translate into integrated approaches in training resources and professional development programs, is emphasised by Hager et al. (1997).

Both Ryan (1997) and Jasinski (1996) also note the potential benefits in making the development of generic skills more explicit and systematic for all learners. However, there are also issues that will need to be addressed. Bayliss et al. (1996) identify the main challenges as:

- the abstract nature of key competency language, which needs to be used to ensure that key competencies are addressed in an explicit manner
- learners dealing with less traditional approaches to teaching and learning (such as the teacher as a facilitator, teamwork and group work, reflective learning) with new and different communication demands which need to be taught
- more complex assessment tasks, which may require considerable LL&N competence
- addressing the professional development implications of these challenges so that learner needs are met within vocational training

Professional development needs

A consistent theme evident in recent key competency research is the need for extensive, ongoing professional development targeting the needs of teachers, trainers and workplace supervisors. Provision of professional development is

critical in translating what has been learnt from recent key competency projects into widespread practice. The concept of generic skills and their benefits also need to be marketed using language appropriate to various audiences.

Recent activities will assist in addressing these requirements. For example Downs (1997) provides a

> . . . *cluster of professional development strategies to inform and support the adoption of the key competencies in teaching, learning and assessment across the VET sector over the next 5 years* (p. 1).

Some of Downs's recommendations have been addressed through:

- the creation of extensive multi-media resources (see Department for Education and Children's Services, South Australia, 1997)
- the production of key competency professional development packages for use in the Certificate in Workplace Training (category 2) and the national Teaching and Learning Course, together with a generic module for use in the VET sector and insertions for the Certificate in Workplace Training (category 1) (Ciampa 1996)
- development of a manual on incorporating the key competencies into national training packages (Down et al. 1997)
- dissemination of key competency information via the Internet
- pre-service and professional development programs and web sites on teaching the key competencies, initiated by universities (though the focus of these programs appears to be primary and secondary education, rather than VET)

While these activities are applauded, there is also a need to evaluate the extent to which these strategies are used by practitioners and actually make a difference in training practices. This research would also assist by providing further information on strategies for developing generic competencies in the workplace and through VET programs.

3.1

Research on generic competencies and the workplace

As noted earlier, Australian research on generic skills has focussed mainly on testing the Mayer definition of key competencies and piloting key competency integration in education and training. The catalyst for this activity has been preparing Australians for current and emerging work contexts and increasingly competitive economic environments. To date, case studies and anecdotal evidence have provided the primary sources of evidence for linking the development and application of generic skills with improved workplace performance. However, Australia is not unique in this regard. Cappelli and Rogovsky (1997) note:

- the difficulties associated with direct measurement of workplace performance
- the lack of empirical research on the importance of specific generic competencies and their relationship with performance
- the relative impact of different generic competencies, and clusters of generic competencies, on performance

Cappelli and Rogovsky (1997) examined some of these issues in relation to the generic competencies identified for the United States (SCANS 1991). Based on data covering 15 job titles in each of eight public utilities, obtained from 553 employees and their supervisors, they found that basic academic (or foundation) skills were identified by both supervisors and employers as more important to job performance than workplace competencies. Similar types of research on the nature and presence of the key competencies has been undertaken in Australia by Gonczi et al. (1995) and Athanasou et al. (1994). Case study research examining organisational perceptions of the value of key competencies was completed by Marett and Hoggard (1996) and Field and Mawer (1996). However, considerable scope exists for further research on the impact of the presence and absence of generic skills on the workplace performance of individuals, work groups and organisations.

Conclusion

THIS STUDY DEMONSTRATES that much has been learnt since 1993 about generic competencies. However, there is still considerable work to be done in translating what has been learnt into widespread practice.

The National Key Competencies Pilot Program has enabled the piloting and evaluation of the Mayer proposals, particularly in terms of the integration of the key competencies in VET curricula, delivery, assessment and reporting. Although undertaken by various researchers, in dispersed locations and varying contexts, there is a significant degree of uniformity in research findings.

Researchers have affirmed the key competencies as an adequate working set of generic skills, except for the lack of resolution on the eighth key competency, *cultural understanding*. Enterprises, peak organisations, governments, trainers and teachers also support the explicit integration of the key competencies into various phases of the training cycle, as a means of improving the quality of learning. However, the research also indicates that effective key competency integration should be viewed as a long-term process, in terms of practical implementation, given substantial professional development and marketing implications. Similarly, further refinement of the key competencies may be desirable

> *. . . as practitioners working with key competencies delineate the knowledge and skills that underpin the development of particular key competencies in specific contexts.* (Ryan 1997 p. 7)

Piloting and research activities have also resulted in a lack of support for the Mayer proposals for separate assessment and reporting of the key competencies.

Areas identified as requiring further research are:

- resolution of the *cultural understanding* key competency
- teaching and training for learning transfer, particularly practices which encourage 'high road' transfer in a range of formal and informal learning contexts
- effective strategies for integrating the key competencies while addressing equity and English language, literacy and numeracy (LL&N) needs

- the impact of key competency resources and professional development initiatives on teaching and learning practices in the VET sector and workplaces

To date, most of the Australian research has focussed on the integration of the key competencies into training activities, rather than the impact on workplace performance. However, there are exceptions, such as in Field and Mawer (1996), Down et al. (1997) and Marett and Hoggard (1996). Other research projects have also involved making connections between the key competencies and workplace performance, to demonstrate the benefits of the key competencies to individuals and enterprises.

These activities suggest that, rather than focussing on defining and redefining what is meant by 'generic' or 'key' competencies, there is merit in researching and promoting a broader, more integrated approach to workplace performance. Generic competencies are only one ingredient in the recipe for effective performance by individuals and work teams. Other ingredients include learning to learn (or ensuring the development of learning capacities), the attitudes and proactivity of the individual, and integrating and applying technical and generic skills.

Factors determined by the context in which work is performed also affect workplace performance.

On the basis of research in 15 'high performance' enterprises, Field and Mawer (1996) have developed a model of skill requirements in high-performance enterprises. Validation (or customisation) of this model, in a range of Australian enterprises, is recommended as a strategy for increasing our knowledge of the role of generic competencies in, and their impact on, workplace performance.

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This review of research on vocational education and training is one of a series of reports commissioned to guide the development of future national research and evaluation priorities.

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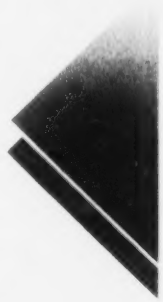
In this consolidation study, she synthesises recent research and evaluation literature on generic skills, with a focus on the conceptualisation and piloting of the Mayer key competencies in Australia between 1993 and early 1998.



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